



Illinois Wesleyan University Digital Commons @ IWU

John Wesley Powell Student Research
Conference

1996, 7th Annual JWP Conference

Apr 13th, 9:00 AM - 10:30 AM

Forensic Chemical Analysis of Lipstick

Brian J. Roper

Illinois Wesleyan University

Forrest J. Frank, Faculty Advisor

Illinois Wesleyan University

Follow this and additional works at: <http://digitalcommons.iwu.edu/jwprc>

Brian J. Roper and Forrest J. Frank, Faculty Advisor, "Forensic Chemical Analysis of Lipstick" (April 13, 1996). *John Wesley Powell Student Research Conference*. Paper 13.
<http://digitalcommons.iwu.edu/jwprc/1996/posters/13>

This Event is brought to you for free and open access by The Ames Library, the Andrew W. Mellon Center for Curricular and Faculty Development, the Office of the Provost and the Office of the President. It has been accepted for inclusion in Digital Commons @ IWU by the faculty at Illinois Wesleyan University. For more information, please contact digitalcommons@iwu.edu.

©Copyright is owned by the author of this document.

Poster Presentation 11

FORENSIC CHEMICAL ANALYSIS OF LIPSTICK

Brian J. Roper and Forrest J. Frank*, Department of Chemistry, IWU

In the ongoing battle on crime, law enforcement officials are routinely presented with many different types of evidence at crime scenes. Evidence such as blood stains and pieces of clothing are of obvious benefits to investigators as they link subjects to crimes. But many crimes go unsolved due to lack of evidence at the scene or evidence that, due to lack of technology, is useless. Recent advances in technology and improved analytical methods have allowed scientists to begin to use evidence previously thought to be useless such as cosmetic smears. A basic analysis of major organic and inorganic constituents of cosmetic smears allow for classification of a smear as a particular product - lipstick, eyeliner, rouge, etc. For example, if upon analysis of a smear, castor oil and wax were found to be the major constituents then the smear would be classified as lipstick. Further, more in-depth chemical analysis of said cosmetics provide a link between victim, perpetrator, and crime scene and can ultimately serve as circumstantial evidence in court.

Lipstick residue and smears are the most often encountered cosmetic smears at crime scenes and therefore our research centers around analysis of the major constituents of lipstick. There is no existing national database through which lipstick can be compared and associated to one manufacturer. Therefore, it is necessary to seek similarities in composition and color between lipstick at a crime scene and lipstick found in the possession of a suspect. Composed of three major components - castor oil, wax, and dyes - lipstick has been analyzed through a series of extractions. Through extractions, the major components of many different lipsticks were drawn out for comparative purposes. Comparisons of different lipsticks were performed based on three different groupings:

1. 5 lipsticks of differing colors made from the same manufacturer to determine consistency of components from one manufacturer.
2. 7 lipsticks of similar color made from 7 different manufacturers to determine consistency of components between manufacturers.
3. 3 lipsticks of similar color and made from the same manufacturer but sectioned into pieces to determine consistency of components within one stick of lipstick.

The results of these comparisons will be presented.